

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 26 SEP 2005

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Applicant's or agent's file reference 10457WOP00	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/AU2004/001417	International filing date (day/month/year) 15 October 2004	Priority date (day/month/year) 16 October 2003
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ A61L 2/20, 9/015; A01N 59/24; A23L 3/3445; A23B 4/16, 9/22, 7/152		
Applicant BOC LIMITED et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ (sent to the applicant and to the International Bureau) a total of sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report |
| <input type="checkbox"/> Box No. II | Priority |
| <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> Box No. VIII | Certain observations on the international application |

Date of submission of the demand 16 August 2005	Date of completion of the report 19 September 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer ROSS OSBORNE Telephone No. (02) 6283 2404

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/001417

Box No. I Basis of the report

With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1 (b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

☒ the international application as originally filed/furnished

☐ the description:

pages as originally filed/furnished

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

☐ the claims:

pages as originally filed/furnished

pages* as amended (together with any statement) under Article 19

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

☐ the drawings:

pages as originally filed/furnished

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/figs

☐ the sequence listing (*specify*):

☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/figs

☐ the sequence listing (*specify*):

☐ any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 5-6, 13-14	YES
	Claims 1-4, 7-12, 15-20	NO
Inventive step (IS)	Claims	YES
	Claims 1-20	NO
Industrial applicability (IA)	Claims 1-20	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

D1 WO 1996/001051

D2 US 6047496

D3 US 6047497

D4 US 4889708

NOVELTY(N) Claims 1-4, 7-12, 15-20

D1 teaches the use of cyanogen as a pesticide/fumigant mixed with carbon dioxide, optionally as compressed mixtures (see pages 9-10) for a number of reasons including reducing the fire hazard associated with the use of cyanogen (see pages 12-14 and example 45). It is considered that reducing the fire hazard with added CO2 would, in practice, mean keeping the Cyanogen/CO2 mixture below its flammability limit and therefore this feature is implicitly disclosed. For these reasons claims 1-4, 7-12 and 15-20 lack novelty.

INVENTIVE STEP(IS) Claims 1-20

Claims 1-4, 7-12, 15-20 as above. D1 does not explicitly teach the levels of CO2 needed, so that in use the cyanogen mixture remains below its flammability limit. However as D1 does teach the use of added CO2 in air mixtures to reduce the fire hazard risks associated with cyanogen, the matter of the optimal level of CO2, such that the fumigant/sterilant remains below its flammability limit (as would be clearly desired when seeking to reduce the fire hazard), is a matter of routine optimization. D1 teaches the use of cyanogen in a minor proportion to the levels of CO2 as is the case in the current application. Claims 1-20 lack inventive step for these reasons. Alternatively, as the use of CO2 to overcome problems with flammable fumigants has already been proposed, claims 1-20 lack inventive step in the light of D1 when combined with any of:

D2 which teaches the use of CO2 in high proportions to inflammable fumigant gases in air mixtures in order to prevent auto-ignition during fumigation and/or

D3 or D4 which teach diluting phosphine fumigants with CO2 in order to render them non-flammable.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2004/001417

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: A61L 2/20, 9/015, A01N 59/24; A23L 3/3445; A23B 4/16, 9/22, 7/152

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPIDS, CA, AGRICOLA, JAPIO, KEYWORDS: CYANOGEN, DICYANOGEN, ETHANEDIOL, CARBON DIOXIDE, FLAME, COMBUSTION, FIRE, SAFE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,Y	WO 1996/001051 A1 (CSIRO et al) 18 January 1996 Pages 9-14, Example 45, claims.	1-20
Y	US 6047496 A (LEITNER) 11 April 2000 Column 2 lines 29-43, column 4 lines 8-25	1-20
Y	US 6047497 A (SMITHYMAN et al) 11 April 2000 Column 2 lines 43-64, column 4 lines 35-48	1-20
Y	US 4889708 A (LATIF et al) 26 December 1989 Column 2 lines 33-46	1-20

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 8 November 2004	Date of mailing of the international search report 22 NOV 2004
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer ROSS OSBORNE Telephone No : (02) 6283 2404

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/001417

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 199 50 634 C1 (BINKER MATERIALSCHUTZ GMBH) 17 May 2001 Whole document	
A	Hooper J. L. et al., (March 2003), Pest Management Science, vol. 59, pp. 353-357. "Toxicity of cyanogen to insects of stored grain". Whole document.	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2004/001417

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	96001051	AU	28752/95	CA	2192959	CN	1156952
		EP	0768822	NZ	289027	US	6001383
US	6047496	NONE					
US	6047497	AU	56310/98	CA	2232485	CN	1260111
		EP	0865731	NZ	329893	ZA	9801980
US	4889708	AU	59258/86	GB	2177004	NZ	216661
		PH	22933	ZA	8604806		
DE	19950634	NONE					
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.							
END OF ANNEX							